

REMARKS

Examiner Crespo is thanked for the thorough examination and search of the subject Patent Application. Claim 29 has been amended.

All Claims are believed to be in condition for Allowance, and that is so requested.

Reconsideration of Claims 29, 32-34, and 40 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent 5,482,881), Hsu (U.S. Patent 5,854,108), and Taketa (U.S. Patent 5,939,749) is requested based on Amended Claim 29 and on the following remarks.

Applicant notes that only Chen shows the key feature of using tilt angle impurity implantation. Hsu and Taketa do not show this feature. Applicant agrees with the Examiner that the source and drain regions are reversed in Chen. Even accounting for this reversal, however, Applicant's claimed invention is novel with respect to the cited art. The double diffused regions correspond to Chen's source 132, 130 in Fig. 8F and Applicant's

drain 313, 315 in Fig. 3c. Therefore, Chen's drain 114 corresponds to Applicant's source 310.

Applicant notes an important difference between Applicant's single diffused source 310 and the single diffused drain 114 of Chen. Chen forms the single diffused drain 114 using the same tilted angle implant MMD2 used to form part of the double diffused source 132. This is shown in Fig. 8E and step 882 of Fig. 8. By contrast, Applicant explicitly masks the single diffused drain region 310 during the tilted angle implantation 380 and 390 as shown by the mask layer 370 in Fig. 3b. The single diffused drain region is formed using a previous ion implantation step.

Applicant respectfully submits that it would not have been obvious to one skilled in the art at the time of the invention to have dramatically altered the teachings of Chen to form the single diffused region using a separate implantation and to mask the single diffused region during the subsequent tilted angle implantation. This key difference between Applicant's claimed invention and the prior art is made clear in Amended Claim 29. In the pertinent section, Amended Claim 29 now reads:

30 a lightly doped implanted region beneath and surrounding
said heavily doped implanted region wherein said lightly
doped and said heavily doped implanted regions are smoothly
graded doping profiles that extend from said common drain
region toward the center of said channel region, wherein
35 said smoothly graded doping profiles are defined by tilt
angle impurity implantation and minimal thermal diffusion,
wherein said source regions are formed prior to said tilt
angle impurity implantation and said source regions are
masked from said tilt angle impurity implantation, and
40 wherein said smoothly graded doping profiles provide
minimal inter-memory cell disturb voltage difference.

The addition of the limitations wherein the source region is
formed prior to the tilt angel impurity implantation and is
masked from that implantation differentiate Applicant's claimed
invention as described above. The cited art, considered
separately or in combination, does not teach or suggested the
claimed invention as described by Amended Claim 29.

Applicant therefore believes that the rejection of Claim 29
under 35 U.S.C. 103(a) should be removed. Further, Claims 32-34
and 40 represent patentably distinct, further limitations on

TSMC-98-850/852B

Amended Claim 29 and should not be rejected under 35 U.S.C. 103(a).

Reconsideration of Claims 29, 32-34, and 40 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent 5,482,881), Hsu (U.S. Patent 5,854,108), and Taketa (U.S. Patent 5,939,749) is requested based on Amended Claim 29 and on the above remarks.

Reconsideration of Claims 35 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent 5,482,881), Hsu (U.S. Patent 5,854,108), Taketa (U.S. Patent 5,939,749), and Maiti (U.S. Patent 5,861,347) is requested based on Amended Claim 29 and on the following remarks.

Based on the above analysis of the cited art, especially as regards Chen, and on Amended Claim 29, Applicant believes that the rejection of Claim 29 under 35 U.S.C. 103(a) should be removed. Further, Claims 35 and 37 represent patentably distinct, further limitations on Amended Claim 29 and should not be rejected under 35 U.S.C. 103(a).

TSMC-98-850/852B

Reconsideration of Claims 35 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent 5,482,881), Hsu (U.S. Patent 5,854,108), Taketa (U.S. Patent 5,939,749), and Maiti (U.S. Patent 5,861,347) is requested based on Amended Claim 29 and on the above remarks.

Reconsideration of Claims 36 and 38 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent 5,482,881), Hsu (U.S. Patent 5,854,108), Taketa (U.S. Patent 5,939,749), and Hong (U.S. Patent 5,445,984) is requested based on Amended Claim 29 and on the following remarks.

Based on the above analysis of the cited art, especially as regards Chen, and on Amended Claim 29, Applicant believes that the rejection of Claim 29 under 35 U.S.C. 103(a) should be removed. Further, Claims 36 and 38 represent patentably distinct, further limitations on Amended Claim 29 and should not be rejected under 35 U.S.C. 103(a).

Reconsideration of Claims 36 and 38 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent 5,482,881), Hsu (U.S. Patent 5,854,108), Taketa (U.S. Patent

TSMC-98-850/852B

5,939,749), and Hong (U.S. Patent 5,445,984) is requested based on Amended Claim 29 and on the above remarks.

Reconsideration of Claim 39 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent 5,482,881), Hsu (U.S. Patent 5,854,108), Taketa (U.S. Patent 5,939,749), and Lin (U.S. Patent 5,501,997) is requested based on Amended Claim 29 and on the following remarks.

Based on the above analysis of the cited art, especially as regards Chen, and on Amended Claim 29, Applicant believes that the rejection of Claim 29 under 35 U.S.C. 103(a) should be removed. Further, Claim 39 represent patentably distinct, further limitations on Amended Claim 29 and should not be rejected under 35 U.S.C. 103(a).

Reconsideration of Claim 39 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent 5,482,881), Hsu (U.S. Patent 5,854,108), Taketa (U.S. Patent 5,939,749), and Lin (U.S. Patent 5,501,997) is requested based on Amended Claim 29 and on the above remarks.

TSMC-98-850/852B

Applicants have reviewed the prior art made of record and not relied upon and agree with the Examiner that while the references are of general interest, they do not apply to the detailed Claims of the present invention.

Allowance of all Claims is requested.

It is requested that should Examiner Crespo not find that the Claims are now Allowable that he call the undersigned at 989-894-4392 to overcome any problems preventing allowance.

Respectfully submitted,

A handwritten signature in cursive script, reading "Douglas R. Schnabel".

Douglas R. Schnabel, Reg. No. 47,927